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(54) Title: PARTICULATE CREAMER COMPRISING FAT AND FOOD COMPOSITIONS COMPRISING SAID CREAMER

(57) Abstract: Particulate compositions comprising 10-90% wt of a matrix material and 10-90% wt of triglycerides of fatty acids, wherein of said triglycerides the amount of H3 (triglyceride of 3 saturated fatty acids of 16 or more carbon atoms) and H2U (triglyc-  
eride of 2 saturated fatty acids of 16 or more carbon atoms and 1 cis-unsaturated fatty acid) taken together is at least 55% wt based on  
the total amount of triglycerides, wherein the compositions are preferably low in triglycerides of transunsaturated fatty acids, for use  
as for example a creamer and/or whitener. The invention also relates to a process for preparing such particulates and food products  
containing such creamer.

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## **PARTICULATE CREAMER COMPRISING FAT AND FOOD COMPOSITIONS COMPRISING SAID CREAMER**

### **Field of the invention**

5 The present invention relates to particulate compositions suitable for use as creamer and/or whitener and/or non-dairy cream alternative, and in particular such compositions comprising triglycerides of fatty acids, wherein the composition is low in triglycerides of trans-unsaturated fatty acids. The invention further relates to a process for manufacturing such compositions and food products containing such creamer and/or whitener and/or non-dairy cream alternative.

### **Background of the invention**

Food compositions (and in particular savoury food compositions) contain in many cases fat. This is especially the case for particulate and/or pasty compositions like preparations for instant cream-style soups and sauces, which to a large extent consist of fat, starch or a  
15 starchy matter, and salt and flavourings. Particulate in this context is to be understood as powder, flakes, cubes, pellets etcetera (i.e. non fluid).

(Mixtures for) cream-style soups and sauces as above referred, but also other products such as instant dishes like pasta with a sauce or wet soups and sauces often contain an ingredient  
20 which is referred to as a creamer, and/or creamer/whitener, and/or creamer/thickener, and/or non-dairy cream. These products usually contain fat blends that can provide a creamy taste and/or mouthfeel and/or improved body and/or viscosity and/or a whitening effect. Such products (herein after called creamers for brevity) can also be in the form of e.g. tablets as a non-dairy cream alternative. To be suitable in these applications the fat blends must have the  
25 appropriate physical properties in terms of melting behaviour, crystallisation behaviour, brittleness, organoleptic properties, taste, as well as physical and chemical stability. In order to increase stability, shelf life and solubility, the fat blends are commonly encapsulated or (partly) coated with another material, e.g. hydrophilic film forming materials. In such encapsulates or partly coated fats, the individual fat blend particles as well as clusters of fat blend particles are  
30 at least partially covered and/or surrounded by the encapsulation material. The fat blends should therefore also be suitable for being submitted to encapsulation and drying processes in order to form free flowing and highly dispersible products. The covering or encapsulation material often contributes to the properties of the creamer.

The fats in savoury compositions described above usually comprise a considerable amount triglycerides of fatty acids (hereinafter for short: triglycerides). Fats are usually mixtures of various triglycerides. The type of fat or fat blend used for a given purpose is determined (next to availability and price) by e.g. the properties the fat has and how it performs in a given product, and in the manufacture of such product. The fat should perform well on e.g. taste, melting in the mouth, taste keepability, but also on ability to be processed into a suitable product as well as performance in the packed product, e.g. keepability (in particular fat staining for cubes packaged in cardboard).

- 10 The triglycerides (which form part or all of the fat) are usually obtained from vegetable sources and may have been subjected to various treatments, such as fractionation (dry or wet), purification, hardening, interesterification, blending etcetera, to give the fat the desired product properties. Hardening unsaturated fat or triglycerides to saturated or partially unsaturated fat or triglycerides is in particular a tool used to obtain the desired melting behaviour. In this way, oils or soft fats can be turned into fats showing more suitable properties for solid or dry formulations.

20 The hardening process (in particular partial hardening) may lead to formation of a certain amount of so-called trans-unsaturated fatty acids (and/or triglycerides containing such trans-unsaturated fatty acids as acyl moiety), in short TFA's. For various reasons it may be desired to reduce or eliminate the amount of trans-unsaturated fatty acids (and triglycerides thereof) in products. For spreads (margarines and the like) a wide range of possible alternative fats and triglycerides are proposed, as is disclosed in e.g. WO 97/16978 and WO 96/39855.

- 25 The triglycerides mentioned in such applications frequently contain lauric acid (C12 saturated fatty acid). It has been found that when one wishes to find an alternative for the trans-unsaturated fatty acids (and fats containing them) in savoury-type food applications (in which the creamers are often used) lauric acid (and its triglycerides) is undesired. Lauric acid and triglycerides containing lauric acid may show a range of desirable properties, in particular melting behaviour, but in a savoury food application triglycerides of lauric acid were found to lead to a (soapy) off-flavour, especially after prolonged storage.

35 Hence, there is a desire for creamer, and/or creamer/whitener, and/or creamer/thickener, and/or non-dairy creamer alternative and also (savory) food compositions such as (mixtures for) cream-style soups and sauces, (instant) food compositions, meal makers and others that

contain such creamer, or creamer/whitener, and/or creamer/thickener, and/or non-dairy creamer alternative, wherein the creamer, and/or creamer/whitener, and/or creamer/thickener, and/or non-dairy creamer alternative which contain triglyceride fats which are low in trans-unsaturated fatty acids (e.g. below 5% of the total fats present, preferably less than 2%). Still  
5 such creamer, and/or creamer/whitener, and/or creamer/thickener, and/or non-dairy creamer alternative should be not too difficult to manufacture and process in comparison to the conventional products, and should still perform well in a (savory) food composition comprising carbohydrates, in particular concerning processability, fat staining, crystallisation, mouthfeel, and other characteristics as mentioned above.

10 Preferably, such product should also be low in lauric acid or triglycerides thereof (e.g. below 10% of the total fats present, preferably less than 3%, most preferably less than 0.5% wt of the total fats present). Also, the alternative fats should combine well with the coating /encapsulation material. Suitable encapsulation material for the creamers etcetera according  
15 to the invention are edible proteins such as for example milk proteins, hydrolysed proteins, edible carbohydrates, such as for example starch or modified starches as well as sugars, sugar syrups or sugar derivatives, dextrines or maltodextrines etcetera. The creamers in the form of encapsulated or covered fat usually contain 20-80% wt of encapsulation material, based on the total creamer.

20 Triglyceride fats can be grouped according to the fatty acids of which they consist (i.e. the acyl moiety of triacyl glycerides). Such groups can be identified by a letter, and herein:

H means saturated fatty acid of 16 carbon atoms or longer (C16+, e.g. up to C24)

U means unsaturated fatty acids in cis conformation (any chain length)

25 E means unsaturated fatty acids in trans conformation (any chain length)

M means saturated fatty acids of 10-14 carbon atoms (C10-C14)

As the present application is about triglycerides of such fatty acids, the fatty acid composition of the triglycerides is given by for example:

H3 (meaning a triglyceride of 3 saturated fatty acids of 16 or more carbon atoms)

30 H2E (meaning a triglyceride of 2 saturated fatty acids of 16 or more carbon atoms and 1 trans-unsaturated fatty acid)

H2M (meaning a triglyceride of 2 saturated fatty acids of 16 or more carbon atoms and 1 saturated fatty acid of 10-14 carbon atoms)

H2U (meaning a triglyceride of 2 saturated fatty acids of 16 or more carbon atoms and 1 cis-  
35 unsaturated fatty acid)

HE2 (meaning a triglyceride of 1 saturated fatty acid of 16 or more carbon atoms and 2 trans-unsaturated fatty acids), and so on for other 3 letter codes.

Fat compositions can thus be characterised in containing certain weight percentages (based on the total amount of triglycerides) of triglycerides of the above codes.

5

Although it is mentioned for E and U that they may have any length, it is to be understood that this relates to fatty acids of approx. 8-24 carbon atoms, and more usually 16-20 carbon atoms.

10

EP 1038444 discloses hard butter compositions for use in chocolate, wherein said hard butter component comprises 50-80% SUS triglycerides (S being C16 and C18 saturated fatty acids, U being C16 and C18 unsaturated acids) and is free from trans acids and lauric acids.

15

US 5,858,427 discloses compositions for use as coatings on ice creams, said compositions comprising 20-60% sugar, 20-70% fat, 0-30% protein. The fat is preferably low in trans unsaturated fatty acids and contains 25-80% SUS (S being saturated fatty acids of 16-24 carbon atoms, U being unsaturated acids of 18 or more carbon atoms), and the fat has a specified melting behaviour ( $N_0$  of 40-80,  $N_{20}$  of 15-60,  $N_{25}$  of 2-20). The compositions can be made by mixing all ingredients.

20

EP 545463 discloses a fat blend for confectionary (chocolate) not needing tempering, which fat blend is low in trans fatty acids, and which blend comprises more than 50% SUS (S being saturated fatty acids of 16-24 carbon atoms, U being C18:1 and C18:2) and less than 30% S'OS' (S' being saturated fatty acids of 16-18 carbon atoms, O being C18:1).

25

US 5,939,114 discloses ice cream coating compositions with reduced waxiness and a low content of trans unsaturated fatty acids, wherein the fat composition contains less than 10% SSS, 25-80% SUS, 2-20% SSU, 8-60% SUU and USU, less than 10% UUU (S being saturated fatty acids of 16-24 carbon atoms, U being unsaturated acids of 18 or more carbon atoms). The coating composition may contain (next to 20-70% of said fat) the usual ingredients for such compositions: 25-60% sugar, and 0-30% cocoa powder, milk proteins, flavours and emulsifiers. The compositions can be made by mixing all ingredients.

30

### Summary of the invention

It has now been found that the objectives as given above may be met (at least in part) by

particulates comprising 10-90% wt (preferably 20-85%) of a matrix material and 10-90% wt (preferably 15-80% wt) of triglycerides of fatty acids, wherein of said triglycerides the amount of H3 (triglyceride of 3 saturated fatty acids of 16 or more carbon atoms) and H2U (triglyceride of 2 saturated fatty acids of 16 or more carbon atoms and 1 cis-unsaturated fatty acid) taken together is at least 55% wt based on the total amount of triglycerides, preferably at least 65%  
5 % wt based on the total amount of triglycerides. In other words:  $H3 + H2U \geq 55\%$ , preferably  $\geq 65\%$  wt, based on total triglycerides.

10 In the particulates according to the invention it may be preferred that the triglycerides of fatty acids are dispersed in the matrix material, preferably as discrete regions. More preferably, the triglycerides of fatty acids are dispersed in the matrix material as oil or fat droplets, crystals or particles. As an alternative or more specific embodiment, said triglycerides of fatty acids are preferably present as as oil or fat droplets or crystals which droplets or crystals are at least partly covered by or encapsulated with the matrix material.

15 It is preferred that the matrix material comprises at least a protein or a carbohydrate, but preferably both a protein and a carbohydrate are both present in the matrix material (e.g. in a ratio by weight protein : carbohydrate of between 1 : 0.2 and 1 : 20). Preferred proteins for the purpose of the invention are dairy protein, hydrolysed protein, gelatin, soy protein, or mixtures  
20 thereof, with dairy proteins (e.g. whey protein or caseinate) being most preferred. Suitable carbohydrates in the present invention are maltodextrin, sugar, sugar derivative, starch, chemically modified starch, physically modified starch, xanthan, guar, locust bean gum, alginate, pectin, carrageenan, polydextrose, or mixtures thereof.

25 In the present invention it is preferred that at least 60% by weight of the particulates (i.e. triglycerides plus matrix material) has a size of 1-1000  $\mu\text{m}$ , preferably 10-600  $\mu\text{m}$ . It is also preferred that at least 60% by weight of the oil or fat fat droplets, crystals or particles has a size of 0.05-100  $\mu\text{m}$ , preferably 0.1-20  $\mu\text{m}$ .

30 The particulates according to the invention are often "dry" preparations. However, such compositions still may contain a considerable amount of water, e.g. as a result of an incomplete dehydration process or as a result from water naturally present in the constituents, such as moisture in flour. The amount of moisture present in the compositions according to the invention is preferably below 30% wt (based on the total composition), more preferably  
35 less than 20% wt, most preferably less than 10%wt.

It may be preferred that the particulates comprise 10-90% wt (preferably 15-80% wt) of triglycerides of fatty acids, which particulates are preferably at least partly covered or encapsulated by 10-90% wt (preferably 20-85%) of an encapsulating or covering material, wherein the amount of H3 (triglyceride of 3 saturated fatty acids of 16 or more carbon atoms) and H2U (triglyceride of 2 saturated fatty acids of 16 or more carbon atoms and one cis-unsaturated fatty acid) taken together in the creamer particulates is at least 55% wt based on the total amount of triglycerides. As is mentioned before, the fat blends are preferably encapsulated by or (partly) coated with another material, e.g. hydrophilic film forming materials. In such encapsulates or partly coated fats, the individual fat blend particles as well as clusters of fat blend particles are at least partially covered and/or surrounded by the encapsulation material. Such covering or encapsulation material preferably comprises a protein and/or a carbohydrate. Examples of such proteins are dairy protein, hydrolysed protein, gelatin, soy protein, or mixtures thereof. Examples of such carbohydrate are maltodextrin, a sugar, sugar syrup, a sugar derivative, starch, chemically modified starch, physically modified starch, xanthan, guar, locust bean gum, alginate, pectin, carrageenan, polydextrose, or mixtures thereof.

Hence, it is now possible to manufacture e.g. creamer and/or whitener and/or non-dairy cream alternative-type products which contain a large proportion of vegetable fats, wherein the fats contain less than 5%, preferably less than 2% wt of trans-unsaturated fatty acids (as triglycerides), and preferably having less than 10% wt (more preferably less than 3%, most preferably less than 0.5%) of triglycerides of lauric acid, and wherein the fats still have appropriate melting and crystallisation behaviour for manufacturing, storage and use. Thus, the invention further relates to a creamer and/or whitener and/or non-dairy cream alternative-type product comprising 10-90% wt (preferably 20-85%) of a matrix material and 10-90% wt (preferably 15-80% wt) of triglycerides of fatty acids (preferably dispersed in the matrix material as discrete regions or as oil or fat droplets, crystals or particles), wherein at least 50% of the fats is of vegetable origin, and which composition is substantially free from trans-unsaturated fatty acids or triglycerides thereof. Preferably, the compositions according to the invention are substantially free from animal fat. The invention also relates to creamers and/or whiteners and/or non-dairy cream alternatives comprising 10-100% of the particulates according to the invention.

The manufacturing process of the particulates according to the invention suitably involves preparing an emulsion or dispersion of the fat and the matrix material (preferably followed by a homogenising step) followed by drying said emulsion or dispersion. Said drying is preferably done by spray-drying but other drying processes such as for example heat drying (including vacuum freeze drying), air drying etc can also be employed. The emulsion or dispersion of the fat and matrix material in an aqueous liquid can be prepared by means as known in the art, e.g. high shear mixing (optionally followed by homogenising), membrane emulsification techniques, or other means.

10 The invention further relates to the use of the particulates according to the invention as creamer and/or thickener and/or whitener and/or non-dairy cream alternative. Such creamer and/or thickener and/or non-dairy cream alternative can be in the form of a cube, pellet or tablet.

15 The invention also relates to (savory) food compositions comprising the particulates according to the invention. Hence, the invention further relates to a composition comprising 2-50% wt salt, 0-30% wt MSG, 0-20% wt herbs and/or spices, 0-30% wt vegetable particulates, 0-30% wt starch-based thickener and further comprising 0.1-65% wt (preferably 2-50% wt) of the particulates according to the invention. Such (savory) compositions can be in the form of flakes, granules, powder or agglomerated or pressed to a cube, pellet, or tablet, and can be intended e.g. as a soup- or sauce concentrate.

25 The (dry) particulates according to the invention can also be applied in liquid or pasty products (e.g. savory products) in which a creaming effect is desired. Such liquid or pasty products usually contain some water, and when the particulates according to the invention are incorporated in such liquid or pasty products the dry particulates will generally melt and/or dissolve, and no longer be visible as such. Examples of such liquid or pasty products are wet soups and sauces, which are often pasteurised, aseptically packaged, or sterilised products (as replacer for e.g. liquid cream). Hence, the present invention further relates to a process for preparing a liquid or pasty sauce, soup or concentrate of such a sauce or soup or concentrate, which process includes the step of including 0.1-65% wt (preferably 2-50% wt) of the particulates according to the invention as set out herein in such liquid or pasty sauce, soup or concentrate of such a sauce or soup or concentrate.

35 **Detailed description of the invention**



In the present invention it means that of the total amount of triglycerides present in the particulates at least 55% wt (preferably at least 65% wt) are triglycerides of fully saturated C16 and longer chains (e.g. C16, C18, C20, C22 and C24) and/or triglycerides containing one cis-unsaturated fatty acid of any chain length and two saturated fatty acids of 16 or more carbon atoms. In connection to this, it is believed that the creamers, whiteners, non-dairy cream alternatives, etcetera as currently on the market in particulate form contain about 30-50% of such H3 + H2U triglycerides as part of their fats.

In the particulates according to the invention it is preferred that the amount of H3 (triglyceride of 3 saturated fatty acids of 16 or more carbon atoms) is at least 15% wt based on the total amount of triglycerides in the particulates, preferably at least 20%. Likewise, it is preferred that the amount of H2U (triglyceride of 2 saturated fatty acids of 16 or more carbon atoms and 1 cis-unsaturated fatty acid) taken together is at least 40% wt based on the total amount of triglycerides in the particulates.

Apart from the amounts of H3 and H2U it can be preferred to use fats in such particulates in a particular ratio. In this case, the ratio H3 / H2U is preferably between 0.5 and 1.2.

Regarding the basic fatty acid composition, it is preferred that the amount of H (i.e. saturated fatty acids of 16 or more carbon atoms) is between 60 and 75% wt based on total amount of fatty acids. Normally, only fatty acids are used with even number of carbon atoms. Similarly, it is preferred that the amount of U (cis-unsaturated fatty acids of any suitable chain length) is between 20 and 45% wt based on total amount of fatty acids.

In the particulates according to the invention the amount of palmitic fatty acid (C16:0) in the triglycerides is preferably between 30 and 70%, more preferably between 40 and 60% wt based on the total amount of fatty acids.

The invention thus also relates to (savory) food compositions comprising the particulates as set out above, such as sauce and soup concentrates. Such (savory) food compositions according to the invention can be any physical format, but the invention is most suitable for savory compositions that are in the form of pasty or particulate matter. Particulate matter is herein to be understood to comprise e.g. flakes, powder, cubes, pellets, tablets. In the case of cubes, pellets, tablets it may be needed to use a technique such as agglomerating or pressing the particulates according to the invention to obtain such shapes. The (savory) food

compositions as set out above usually contain additional material, such as 2-50% wt salt, 0-30% wt MSG, 0-50% fat, 0-20% wt herbs and/or spices, 0-30% wt vegetable particulates, 0-30% wt starch-based thickener and further comprising 0.1-30% wt of the particulates according to the invention. Examples of such (savory) food compositions are soup- and  
5 sauce concentrates (which yield a soup or sauce upon dilution and heating with an aqueous liquid). The (savory) compositions above may be in the form of flakes, granules, powder or agglomerated or pressed to a cube, pellet, or tablet.

10 The savory food compositions as set out above may further comprise (e.g. in an amount of 0.1-50% wt) one or more of the following ingredients: herbs and/or spices, tomato powder, vegetable pieces, monosodium glutamate and other components.

15 The particulates can be used as such (in any physical shape), as part of a dry (as defined above) composition e.g. a soup or sauce concentrate, but the particulates may also be used in liquid or pasty formulations.

## EXAMPLES

### Example 1: four different fat blends for use in creamers

20 Fat blends A-D were prepared from various known fats and fats specifically produced according to the top half of the table 1. In the second half of that table the fatty acid composition is given in accordance with the definitions as herein defined, as is the ratio symmetric : asymmetric triglycerides for H2U.

25 2 Kg fat blend was prepared by mixing 1,2kg POs and 0,8 kg PO (blend A in the table below) and heated up 75°C in a blending vessel under nitrogen atmosphere for 10 min.

Other fat blends which can be used are B-D, with good properties. PO is palm oil. POs is a dry-fractionated palm stearin with a melting point of approx. 53°C. PO58 is fully hardened palm oil. Fatblend "comp" is a comparative, from the prior art, obtained by hardening palm oil to a melting point of approx. 44°C.

Table 1

	Comp	A	B	C	D
PO		40	30	40	20
Pos		60	70	50	80
PO58				10	
PO44	100				
H3	12	25	27	31	29
H2E	29	0	0	0	0
H2M	1	1	1	2	1
H2U	21	46	45	42	44
HE2	10	0	0	0	0
H3/H2U	0.55	0.54	0.60	0.74	0.67
H	53	61	63	64	64
E	24	0	0	0	0
U	23	39	37	36	36
Palmitic	45	54	56	53	57
H3+H2U	33	71	72	72	73

Note: the numbers of all the fats given does not add up to 100%, as some minor amounts of other fats are also present.

## 5 Example 2: manufacture of different creamers

Six different creamers were prepared having the net composition as given in table 2 below.

Table 2

Ingredients	Carboydrates	Fat	Proteines	Others	Total
Product	(%)	(%)	(%)	(%)	(%)
Creamer a	69	15	14	2	100
Creamer b	11,5	75	10	3,5	100
Creamer c	15	78	7	0	100
Creamer d	20,5	65	14	0,5	100
Creamer e	44	50	6	0	100
Creamer f	15	78	7	0	100

The carbohydrates used included wheat flour, maltodextrin, lactose, glucose syrup. The milk proteins used included calcium and sodium caseinate, whey protein. The category others include minor components such as citrate and phosphate.

- 5 The procesing involved for all creamers a-f the following process: all ingredients were mixed in a mixing tank with an Ultraturrax for 5 min. at 55°C and then homogenized in a homogenizer (Schroeder) at one stage, 200 bar. The resulting suspension then was spray dried in a multi stage spray dryer (Niro). The inlet temperature was about 165 °C; the outlet temperature about 62°C. The dry particulate creamer was agglomerated for 5 minutes in an agglomeration process step (Glatt Agglomerator, inlet temperature 80 °C, outlet temperature 50 °C). The spray dried and agglomerated creamer was stored under cool conditions below 20°C and used in the formulations according to the examples 3-8.

The following ingredients were used:

Example 2a	Example 2b	Example 2c
5 kg water	5 kg water	5 kg water
0.3 kg fat blend A	1.5 kg fat blend A	1.56 kg fat blend A
0.28 kg whey protein	0.02 kg sodium caseinate	0.14 kg sodium caseinate
0.2 kg wheat flour	0.18 kg calcium caseinate	0.3 kg lactose
0.58 kg maltodextrin	0.23 kg lactose	
0.6 kg lactose	0.07 kg phosphate	
0.04 kg citrate		

Example 2d	Example 2e	Example 2f
5 kg water	5 kg water	5 kg water
1.3 kg fat blend A	1 kg fat blend A	1.56 kg fat blend A
0.28 kg sodium caseinate	0.88 kg sodium caseinate	0.14 kg sodium caseinate
0.22 kg maltodextrin	0.12 kg Glucose syrup	0.3 kg glucose syrup
0.19 kg lactose		
0.01 kg citrate		

### Example 3: Saffron cream soup

A dry soup mix for a saffron cream soup was made by mixing:

- 20 Creamer as in example 2-c 32.94%

	Heat/moisture-treated starch, dried	15.73%
	Skim milk powder	21.32%
	Xanthan	1.12%
	Common salt	4.51%
5	Citric acid granular	0.22%
	Powdered onion and leek	5.55%
	Sugar	2.50%
	Saffron powder	0.08%
	Various flavourings	16.03%

10 To prepare the creamy saffron soup 40g of this dry mixture was stirred into 200ml cold water, mixed and briefly brought to the boil.

#### **Example 4: Mushroom cream soup**

15 A dry soup mix for a mushroom cream soup was made by mixing:

	Creamer according to example 2-e	28.40%
	Heat/moisture-treated starch, dried	14.76%
	Skim milk powder	22.14%
	Xanthan	1.05%
20	Common salt	4.22%
	Citric acid granular	0.40%
	Powdered onion and leek	5.18%
	Sugar	1.10%
	Powdered mushrooms and ceps	14.49%
25	Various flavourings	8.26%

To prepare the creamy mushroom soup 40g of this dry mixture was stirred into 200ml cold water, mixed and briefly brought to the boil.

#### **Example 5: Tomato cream sauce**

30 A dry sauce mixture for a creamy tomato sauce was made by mixing:

	Creamer according to example 2-a	28.40%
	Heat/moisture-treated starch, dried	14.76%
	Tomato powder	36.63%
	Xanthan	1.05%
35	Common salt	4.22%

Citric acid granular	0.40%
Powdered onion and leek	5.18%
Sugar	1.10%
Various flavourings	8.26%

- 5 To prepare the creamy tomato sauce 40g of this dry mixture was stirred into 200ml cold water, mixed and briefly brought to the boil.

#### Example 6: leek cream-style sauce

A dry sauce mixture for a leek cream-style sauce was made by mixing:

10	Creamer according to example 2-d	28.40%
	Heat/moisture-treated starch, dried	14.76%
	Leek powder	36.63%
	Xanthan	1.05%
	Common salt	4.22%
15	Citric acid granular	0.40%
	Powdered onion and leek	5.18%
	Sugar	1.10%
	Various flavourings	8.26%

- 20 To prepare the creamy tomato sauce 40g of this dry mixture was stirred into 200ml cold water, mixed and briefly brought to the boil.

#### Example 7: creamer-cube

- Following the process in patent application EP 0779 039 a formed cream substitute was prepared by mixing 32,5 g spray dried cream powder (having a fat content of 75%) according to example 2-b with 32,5g spray dried creamer (including fat blend) on the basis of caseinate, having a fat content of 75% and the mixture was mixed in 35g of heated butter fat. The paste-like mass was extruded and formed into cubes of 7g each by a conventional molding machine.

- 30 The cubes so-obtained were equivalent in providing creaminess to that of an amount of at least 2 tablespoons of cream. This is the amount which is generally used for refining 250 ml of food. The cubes were dispersible in hot meals and were equivalent to the addition of cream as to whitening power, creaminess, sensation in the mouth and taste. The addition of the cubes unlike the addition of cream, did not lead to a dilution of the taste or the consistency of the meals. It was possible to store the cubes without cooling.

**Example 8: potato soup with vegetables**

A canned, creamy potato soup (1000kg) was made by mixing with 630 kg water and 0.4% white wine the following ingredients:

creamer 2-c	1.5%
5 salt	0.7%
maize starch modified	0.7%
wheat flour	0.35%
xanthan	0.1%

The mixture was maintained in a mixing tank for 10 minutes.

10 Then the following ingredients were added thereto:

chopped potatoes fresh	15 %
onion slices deep frozen	5.0%
pork sliced, smoked	2.8%
15 leek slices, deep frozen	2.8%
carrots slices, deep frozen	2.8%
celery slices, deep frozen	1.6%
potato flakes, dehydrated	2.3%
garlic, deep frozen	0.02%
20 majoran	0.005%
pepper white	0.03%
sunflower oil	0.9%

and mixed thoroughly with a mixer unit for 15 minutes and and heated up to 75°C.

The prepared potato soup was filled in cans with a dosing system and sealed. The product

25 was sterilised at 121°C / 6 minutes holding time.

**CLAIMS**

1. Particulates comprising 10-90% wt (preferably 20-85%) of a matrix material and 10-90% wt (preferably 15-80% wt) of triglycerides of fatty acids, wherein of said triglycerides the amount of H3 (triglyceride of 3 saturated fatty acids of 16 or more carbon atoms) and H2U (triglyceride of 2 saturated fatty acids of 16 or more carbon atoms and 1 cis-unsaturated fatty acid) taken together is at least 55% wt based on the total amount of triglycerides.
2. Particulates according to claim 1, wherein the triglycerides of fatty acids are dispersed in the matrix material, preferably as discrete regions.
3. Particulates according to claim 1-2, wherein the triglycerides of fatty acids are dispersed in the matrix material as oil or fat droplets, crystals or particles.
4. Particulates according to claim 1-3, wherein said triglycerides of fatty acids are present as oil or fat droplets or crystals which droplets or crystals are at least partly covered by or encapsulated with the matrix material.
5. Particulates according to claim 1-4, wherein the matrix material comprises a protein and/or a carbohydrate.
6. Particulates according to claim 5, wherein the protein comprise a dairy protein, hydrolysed protein, gelatin, soy protein, or mixtures thereof.
7. Particulates according to claim 5, wherein the carbohydrate comprises maltodextrin, sugar, sugar derivative, starch, chemically modified starch, physically modified starch, xanthan, guar, locust bean gum, alginate, pectin, carrageenan, polydextrose, or mixtures thereof.
8. Particulates according to claim 1-7, wherein at least 60% by weight of the particulates has a size of 1-1000  $\mu\text{m}$ , preferably 10-600  $\mu\text{m}$ .
9. Particulates according to claim 1-8, wherein at least 60% by weight of the oil or fat fat droplets, crystals or particles has a size of 0.05-100  $\mu\text{m}$ , preferably 0.1-20  $\mu\text{m}$ .



10. Particulates according to claim 1-9, wherein said amount of H3 + H2U is at least 65% wt based on the total amount of triglycerides.
- 5 11. Particulates according to claim 1-10, wherein the amount of H3 (triglyceride of 3 saturated fatty acids of 16 or more carbon atoms) is at least 15% wt based on the total amount of triglycerides, preferably at least 20%.
- 10 12. Particulates according to claim 1-11, wherein the amount of H2U (triglyceride of 2 saturated fatty acids of 16 or more carbon atoms and 1 cis-unsaturated fatty acid) taken together is at least 40% wt based on the total amount of triglycerides.
13. Particulates according to claim 1-12, wherein the ratio H3 / H2U is between 0.5 and 1.2.
- 15 14. Particulates according to claim 1-13, wherein the amount of H is between 60 and 75% wt based on total amount of fatty acids.
- 20 15. Particulates according to claim 1-14, wherein the amount of U is between 20 and 45% wt based on total amount of fatty acids.
- 25 16. Particulates according to claim 1-15, wherein the amount of palmitic fatty acid (C16:0) based on the total amount of fatty acids is between 30 and 70% wt.
17. Particulates according to claim 1-16, containing less than 30% wt (preferably less than 20% wt) of water.
- 30 18. Particulates according to claim 1-17, wherein the particulates are in the shape of flakes, granules, powder, cube, pellet, or tablet.
19. Creamer, whitener or non-dairy cream alternative comprising 10-100% of the particulates according to claim 1-18.
20. Composition comprising 2-50% wt salt, 0-30% wt MSG, 0-50% fat, 0-20% wt herbs and/or spices, 0-30% wt vegetable particulates, 0-30% wt starch-based thickener and

further comprising 0.1-65% wt (preferably 2-50% wt) of the particulates according to claim 1-19.

- 5 21. Composition according to claim 20 in the form of flakes, granules, powder or agglomerated or pressed to a cube, pellet, or tablet.
22. Composition according to claim 20-21, which is a soup- or sauce concentrate.
- 10 23. Process for manufacturing the particulates according to claim 1-19, comprising the steps of:
- preparing an emulsion or dispersion of the fat and matrix material in an aqueous liquid
  - drying said emulsion or dispersion.
- 15 24. Process according to claim 23, further comprising a homogenising step prior to the drying of the emulsion or dispersion.
25. Process according to claim 23-24, wherein the drying is carried out by spray-drying.
- 20 26. Process for preparing a liquid or pasty sauce, soup or concentrate of such a sauce or soup, which process includes the step of including 0.1-65% wt (preferably 2-50% wt) of the particulates according to claim 1-19 in such liquid or pasty sauce, soup or concentrate of such a sauce or soup.

# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP 03/12033

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A23D7/00 A23D9/00 A23D9/04 A23C11/00 A23C11/02  
A23L1/39 A23L1/40

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A23D A23C A23L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, PAJ, WPI Data, FSTA, BIOSIS

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	AU 726 767 B (LODERS CROKLAAN BV) 23 November 2000 (2000-11-23)  * page 2, line 17 - page 3, line 30; example 3; claims 1, 6 and 10 *	1-18, 20-22, 25,26
Y	US 5 718 938 A (SMITH KEVIN W ET AL) 17 February 1998 (1998-02-17)	1-18, 20-22, 25,26
X	* column 1, lines 31-35, column 4, line 63 - column 7, line 19; claims 1, 7, 9, 10 and 11 *	23,24
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Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

### \* Special categories of cited documents :

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- \*E\* earlier document but published on or after the international filing date
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- \*P\* document published prior to the international filing date but later than the priority date claimed

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Date of the actual completion of the international search

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# INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP 03/12033

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 94 16572 A (UNILEVER PLC ;UNILEVER NV (NL)) 4 August 1994 (1994-08-04)	1-18, 20-22, 25,26
X	* page 4, lines 30-37; page 6, line 1- page 8, line 28; claims 1, 4, 8 and 9 *	23,24
	-----	

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/EP 03/12033

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
AU 726767	B	23-11-2000	AU 726767 B2	23-11-2000
			AU 4877699 A	04-11-1999
			AU 3652395 A	26-04-1996
			CA 2199828 A1	11-04-1996
			DE 69513413 D1	23-12-1999
			DE 69513413 T2	13-04-2000
			DK 783250 T3	10-04-2000
			WO 9610338 A2	11-04-1996
			EP 0783250 A1	16-07-1997
			JP 10506285 T	23-06-1998
			US 5858427 A	12-01-1999
			ZA 9508238 A	01-04-1997
<hr/>				
US 5718938	A	17-02-1998	AT 147583 T	15-02-1997
			AU 685780 B2	29-01-1998
			AU 6139994 A	26-09-1994
			CA 2156169 A1	15-09-1994
			DE 69401498 D1	27-02-1997
			DE 69401498 T2	22-05-1997
			DK 687142 T3	14-07-1997
			WO 9419953 A1	15-09-1994
			EP 0687142 A1	20-12-1995
			US 5968584 A	19-10-1999
<hr/>				
WO 9416572	A	04-08-1994	AT 142084 T	15-09-1996
			AU 7005494 A	15-08-1994
			CA 2154570 A1	04-08-1994
			DE 69400476 D1	10-10-1996
			DE 69400476 T2	20-02-1997
			DK 681433 T3	24-02-1997
			WO 9416572 A1	04-08-1994
			EP 0681433 A1	15-11-1995
			ES 2093519 T3	16-12-1996
			JP 8506725 T	23-07-1996
			ZA 9400406 A	20-07-1995
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